

**ABSTRACT OF THE DISCLOSURE**

A fuel system for an energy conversion device includes a deoxygenator system with a porous membrane. The deoxygenator includes an oxygen receiving channel separated from the fuel channel by the porous membrane. The capillary forces counteract the pressure differential across the membrane, preventing any leakage of the fuel, while the oxygen concentration differential across the membrane allows for deoxygenation of the fuel through the porous membrane.

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